CLAIM LISTING

1-14 Canceled

15. (New) A method for monitoring an optical transmission line, the method including:

(a) generating an optical pump signal at a pump power and coupling the optical pump signal into the optical transmission line, the optical pump signal being generated by a pump source of an optical amplifier at a pump power that is (i) sufficiently high to cause amplified spontaneous emission in the optical transmission line and is (ii) modulated during a period in which the optical amplifier is started up;

(b) detecting the power level of an amplified spontaneous emission signal that is generated in the optical transmission line due to the presence of the optical pump signal in the optical transmission line, the amplified spontaneous emission signal being fed back toward the location at which the optical pump signal is coupled into the optical transmission line, and the detecting being performed in a phase-sensitive manner; and

(c) generating an error signal when an error condition occurs in which the power level of the detected amplified spontaneous emission signal is below a preset threshold value.

16. (New) The method of claim 15 further including deactivating the pump source for the optical pump signal in the event the error signal is generated.

17. (New) The method of claim 15 further including generating an error notification in the event the error signal is generated.

18. (New) The method of claim 15 wherein the pump power is increased from an initial power level to a final power level and the amplified spontaneous emission signal is detected at multiple detection times as the pump power is increased from the initial power level to the final power level, and further including comparing the power of the amplified spontaneous emission signal at each of the multiple detection times to a respective threshold value that corresponds to the pump power at the respective detection time.

19. (New) The method of claim 18 wherein the pump power is increased continuously from the initial power level to the final power level and the power level of the amplified spontaneous emission signal is detected and compared to the respective threshold value either continuously or in incremental steps.

20. (New) The method of claim 18 wherein the pump power is increased in incremental steps from the initial power level to the final power level and the power level of the amplified spontaneous emission signal is detected and compared to the respective threshold value in corresponding incremental steps.

21. (New) The method of claim 18 wherein the error signal is generated after multiple occurrences of the error condition as the pump power is increased from the initial power level to the final power level.

22. (New) The method of claim 15 further including, prior to setting the pump power at a value at which non-linear optical effects occur in the optical transmission line, setting the pump power at a value at which essentially no non-linear optical effects occur in the optical transmission line, detecting the power of a reflected signal in the optical transmission line, and generating a reflection error signal when the power of the detected reflected signal exceeds a threshold reflected power value.

23. (New) The method of claim 15 wherein the modulation in the pump power is an amplitude modulation.

24. (New) The method of claim 23 wherein a time weighted average of the pump power is below a preset limit.

25. (New) The method of claim 15 wherein the optical pump signal is coupled into the optical transmission line in a direction opposite to that in which a signal that is to be optically amplified is transmitted.

26. (New) The method of claim 15 wherein the threshold value for the amplified spontaneous emission signal power level is determined in a calibration process, with the power level of the amplified spontaneous emission signal being detected as a function of the pump power when the optical transmission line is connected and intact.

27. (New) The method of claim 26 further including storing a value for the detected power level of the amplified spontaneous emission signal when the optical transmission line is connected and intact, and storing a value for the pump power at which the amplified spontaneous emission signal is detected.

28. (New) An optical amplifier capable of generating an optical pump signal at a pump power sufficiently high to cause amplified spontaneous emission in an optical transmission line, the optical amplifier including:

(a) an optical pump source for generating the optical pump signal at the pump power, and a first coupling unit for coupling the optical pump signal into the optical transmission line;

(b) a second coupling unit for decoupling an amplified spontaneous emission signal resulting from the optical pump signal in the optical transmission line and fed back toward the second coupling unit;

(c) a detector unit for detecting the decoupled amplified spontaneous emission signal in a phase-sensitive manner and producing a detector signal representative of the power level of the detected amplified spontaneous emission signal; and

(d) a control unit operatively connected to receive the detector signal from the detector unit, the control unit for (i) modulating the pump power of the optical signal generated by the pump source during a period in which the optical amplifier is started up, and for (ii) comparing the detector signal to a threshold value and generating an error signal when the detector signal falls below the threshold value.

29. (New) The optical amplifier of claim 28 wherein the control unit is also for controlling the pump source in response to the error signal.

30. (New) The optical amplifier of claim 28 wherein an error notification is generated in response to the error signal.

31. (New) The optical amplifier of claim 28 wherein the first coupling unit comprises a wavelength-sensitive coupling unit which (i) passes wavelengths which are higher by a preset value than the optical pump signal wavelength along the optical transmission line with a low loss and which (ii) includes a branching-off arm for coupling the optical pump signal into the optical transmission line with low loss.

32. (New) The optical amplifier of claim 31 wherein the second coupling unit comprises a wavelength-independent splitter which only decouples a small portion of the power of the amplified spontaneous emission signal.

33. (New) The optical amplifier of claim 28 wherein the second coupling unit comprises a wavelength-independent splitter which only decouples a small portion of the power of the amplified spontaneous emission signal.